State of Rhode Island and Providence Plantations
Water Resources Board
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To: Public Drinking Water Protection Committee
Through: Juan Mariscal, P.E., General Manager
From: Beverly O'Keefe, Supervising Planner
Date: April 28, 2006
Subject: Drought Update: Current Water Conditions

BACKGROUND: Pursuant to State Guide Plan Element 724: The Rhode Island Drought Management Plan, the Water Resources Board is required to assess water conditions monthly. Staff has assembled climate information from a variety of sources to monitor the potential for drought conditions in Rhode Island which is summarized below:

Data Source	Date	Report Summary
NOAA NWS Taunton MA Climate Report	24 Apr 2006	1.44" received TF Green Airport 0.13" below normal for April
USGS Surface Water Runoff Report	March 2006	RI – Below Normal
Scituate Reservoir	24 Apr 2006	284.63 FEET (101.9 % of Capacity)
USGS Groundwater Level Summary	March 2006	Central & Northern –Below Normal South County- Normal
USGS RI Groundwater Level Detail Well Report	March 2006	6 Record Low Water Levels
NOAA NWS Drought Severity Index: Palmer	15 Apr 2006	Near Normal
NOAA NWS Crop Moisture Index	15 Apr 2006	Slightly Dry/Favorably Moist
NOAA NWS Drought Monitor Seasonal Assessment	18 Apr 2006	Abnormally Dry
NOAA NCDA Statewide Precipitation Ranks	March 06	Much Below Normal

Rhode Island experienced a decrease in the amount of precipitation during March 2006 with month to date rainfall recorded at -0.57 inches. Normal rainfall for March is 4.13 inches which has resulted in a very dry month (departure from normal is -3.56 inches). An updated Rhode Island county precipitation report will be provided at the committee meeting (www.erh.noaa.gov/box/fcsta/BOSCLIPVD.html).

The **USGS Water Conditions Statement** is summarized in three tables (Surface Water Runoff, Ground-water Level Conditions, and Summary of Rhode Island Ground-Water Levels) embedded in this memorandum.

Surface-water flows at the end of March 2006 were below normal (lowest 25 percent of flows for March) for Rhode Island rivers. New minimum monthly mean discharge values for March were recorded at two rivers in Rhode Island (Blackstone River at Woonsocket, Moshassuck River at Providence). This assessment is based on monthly flow statistics (30-year period from 1971 to 2000) from 22 near-real-time stations with 30 or more years of record. Please refer to the March Surface-Water Conditions map for more information

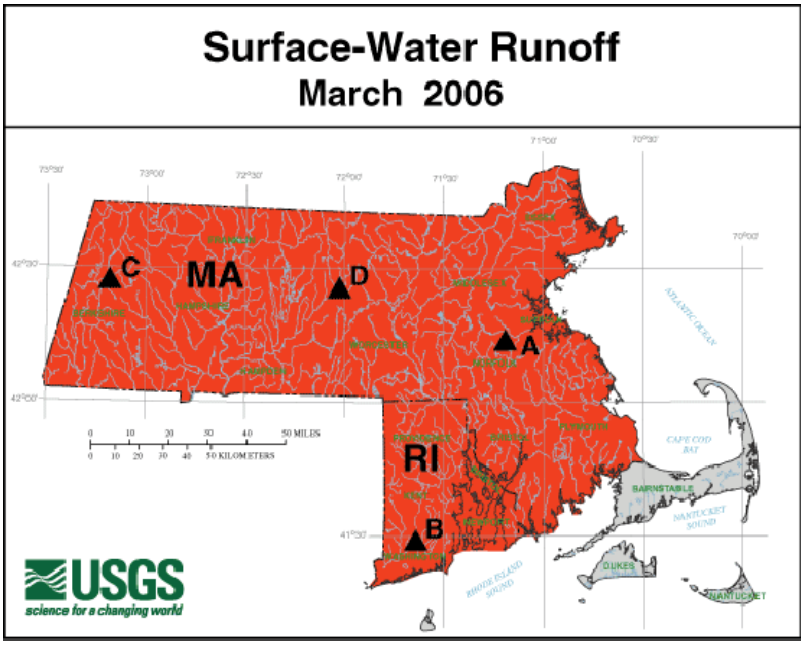


Table 1: Surface Water Runoff

COMPARISON WITH MONTHLY NORMAL RANGE

- ABOVE NORMAL – within the highest 25 percent of record for this month
- NORMAL RANGE
- BELOW NORMAL – within the lowest 25 percent of record for this month
- NO STREAM DATA
- ▲ INDEX STREAM GAGE AND IDENTIFIER LETTER

NOTE: Additional sites from those shown are used to determine ranges

Ground-water levels at the end of March 2006 were generally below normal (lowest 25 percent of levels for March) in most of central and northern Rhode Island. Ground-water levels were generally normal (between the highest and lowest 25

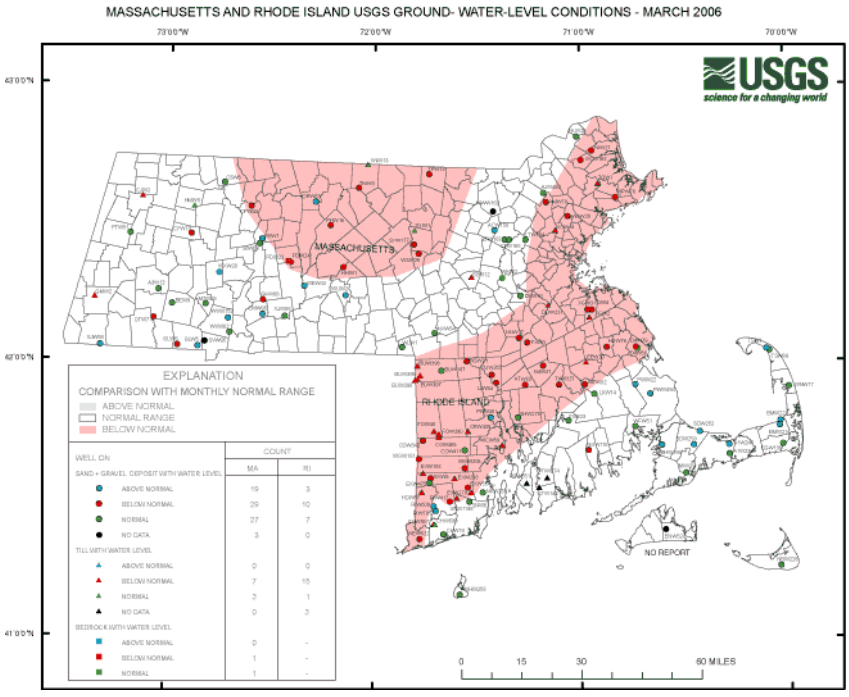


Table 2: Ground Water-Level Conditions

percent of levels for March) southern Rhode Island (including Block Island). Please refer to the March Ground-Water Conditions map for individual well conditions and other information.

Six wells in Rhode Island set new record low levels for the month of March. One well in Massachusetts and one well in Rhode Island set new record high levels for the month of March.. The table of ground-water levels for March 2006 shows these records.

Borden Brook/Cobble Mountain, Quabbin, and Scituate (Rhode Island) Reservoirs were 93-, 100-, and 104-percent full, respectively, at the end of February. In comparison, these reservoirs were 95-, 101-, and 104-percent full, respectively, at the end of January.

TABLE 3: SUMMARY OF GROUND-WATER LEVELS March 2006 PROVISIONAL
(NOTE: Wells with * also available in real-time at top of Ground-Water Data page; OWc, monthly measured value used in high ground-water level estimation report, USGS Open-File Report 80-1205.)

WELL	L T O P O	I T H	START YEAR OF RECORD	NET CHANGE IN MONTH (FEET)	NET CHANGE IN ONE YEAR (FEET)	DEPARTURE FROM MONTHLY MEDIAN (FEET)	WATER LEVEL BELOW LAND-SURFACE DATUM (OWc) (FEET)		DAY
RHODE ISLAND									
BURRILLVILLE 187	T	S	1968	- 0.41	+ 0.08	- 0.36	14.86		23
BURRILLVILLE 395	U	T	1992	- 0.66	- 0.80	- 0.85	6.72		28
BURRILLVILLE 396	V	T	1992	- 0.26	- 1.01	- 0.58	5.33		30
BURRILLVILLE 397	H	T	1992	- 1.01	-----	- 0.69	13.59		29
BURRILLVILLE 398	H	T	1992	- 1.00	- 3.55	- 3.78	10.41	<	29
CHARLESTOWN 18	F	S	1946	- 2.30	- 2.03	- 0.44	16.54		23
CHARLESTOWN 586	V	T	1992	- 0.10	- 0.36	- 0.18	3.67		28
CHARLESTOWN 587	S	T	1992	- 1.54	- 4.65	- 4.32	9.01	<	28
COVENTRY 342	V	S	1991	- 1.16	- 0.53	- 1.74	8.92		23
COVENTRY 411	S	S	1961	- 1.39	+ 0.07	- 0.76	21.19		23
COVENTRY 466	V	T	1992	- 0.07	- 0.36	- 0.34	2.79		29
CRANSTON CITY 439	S	T	1992	- 4.54	- 6.41	- 3.80	14.12		28
CUMBERLAND 265	S	S	1946	- 0.52	- 1.30	- 1.10	12.53		23
EXETER 6	V	S	1948	- 0.42	- 0.40	- 0.48	5.31		23
EXETER 158	S	T	1991	- 1.82	- 1.45	- 2.11	7.72		23
EXETER 238	F	T	1991	- 0.49	- 1.69	- 0.82	12.04	<	23
EXETER 278	H	T	1991	- 2.78	- 5.56	- 3.53	10.91		23
EXETER 475	V	S	1981	- 0.55	+ 0.45	+ 0.12	13.17		23
EXETER 554	S	S	1988	- 0.85	- 1.29	- 0.60	9.81		23
FOSTER 40	H	T	1991	- 0.56	- 1.36	- 1.65	4.70	<	23
FOSTER 290	H	T	1992	- 1.85	- 2.92	- 1.80	6.53		29
HOPKINTON 67	S	T	1991	- 2.81	- 0.60	- 2.32	14.96		23
LINCOLN 84	V	S	1946	- 0.54	- 1.31	- 1.43	5.26		23
LITTLE COMPTON 142	S	T	1992	-----	-----	-----	-----		
NEW SHOREHAM 258	U	T	1991	- 0.59	- 0.74	- 0.53	11.33		26
NORTH KINGSTOWN 255	V	S	1954	- 1.09	- 3.31	- 0.51	7.73		23
NORTH SMITHFIELD 21	T	S	1947	- 0.62	- 1.42	- 1.29	7.65	<	23
PORTSMOUTH 551	H	T	1992	-----	-----	-----	-----		
PROVIDENCE 48	T	S	1944	- 0.49	- 0.40	+ 2.22	3.87		23
RICHMOND 417	V	S	1976	- 0.77	- 1.38	- 0.49	6.59		23
RICHMOND 600*	T	S	1977	- 0.68	+ 0.49	+ 0.49	32.75		23
RICHMOND 785	F	S	1989	- 0.83	+ 1.45	+ 2.80	21.06	>	23
SOUTH KINGSTOWN 6	V	S	1955	- 1.44	- 1.38	- 0.20	11.17		23
SOUTH KINGSTOWN 1198	F	S	1988	- 1.47	- 1.64	- 0.71	7.82		23
TIVERTON 274	T	T	1990	-----	-----	-----	-----		
WARWICK 59	S	T	1991	- 0.50	- 0.97	- 0.68	5.19		23
WESTERLY 522	F	S	1969	- 1.02	- 1.33	- 0.63	12.07		23
WEST GREENWICH 181	U	S	1969	- 0.51	- 0.53	- 0.99	15.76	<	23
WEST GREENWICH 206	S	T	1991	- 0.35	- 0.80	- 0.56	4.23		23

>> SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR PERIOD OF RECORD
> SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR END OF NOVEMBER
<< SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR PERIOD OF RECORD
< SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR END OF NOVEMBER
------ - DATA NOT AVAILABLE

TOPOGRAPHIC (TOPO) SETTING: F=FLAT, G=FLOOD PLAIN, H=HILLTOP, S=HILLSIDE,
T=TERRACE, U=UNDULATING, V=VALLEY, W=UPLAND DRAW
Table LITHOLOGY (LITHO): G=GRAVEL, R=ROCK, S=SAND, T=TILL

The NOAA National Weather Service (NWS) Drought Severity Index for the period ending February 2006 shows extremely moist conditions for the region (Table 4). The Crop Moisture Index for the same time period shows wet conditions (Table 5). The RI Precipitation Report will be distributed at the Committee meeting.

Table 4: Drought Severity Index

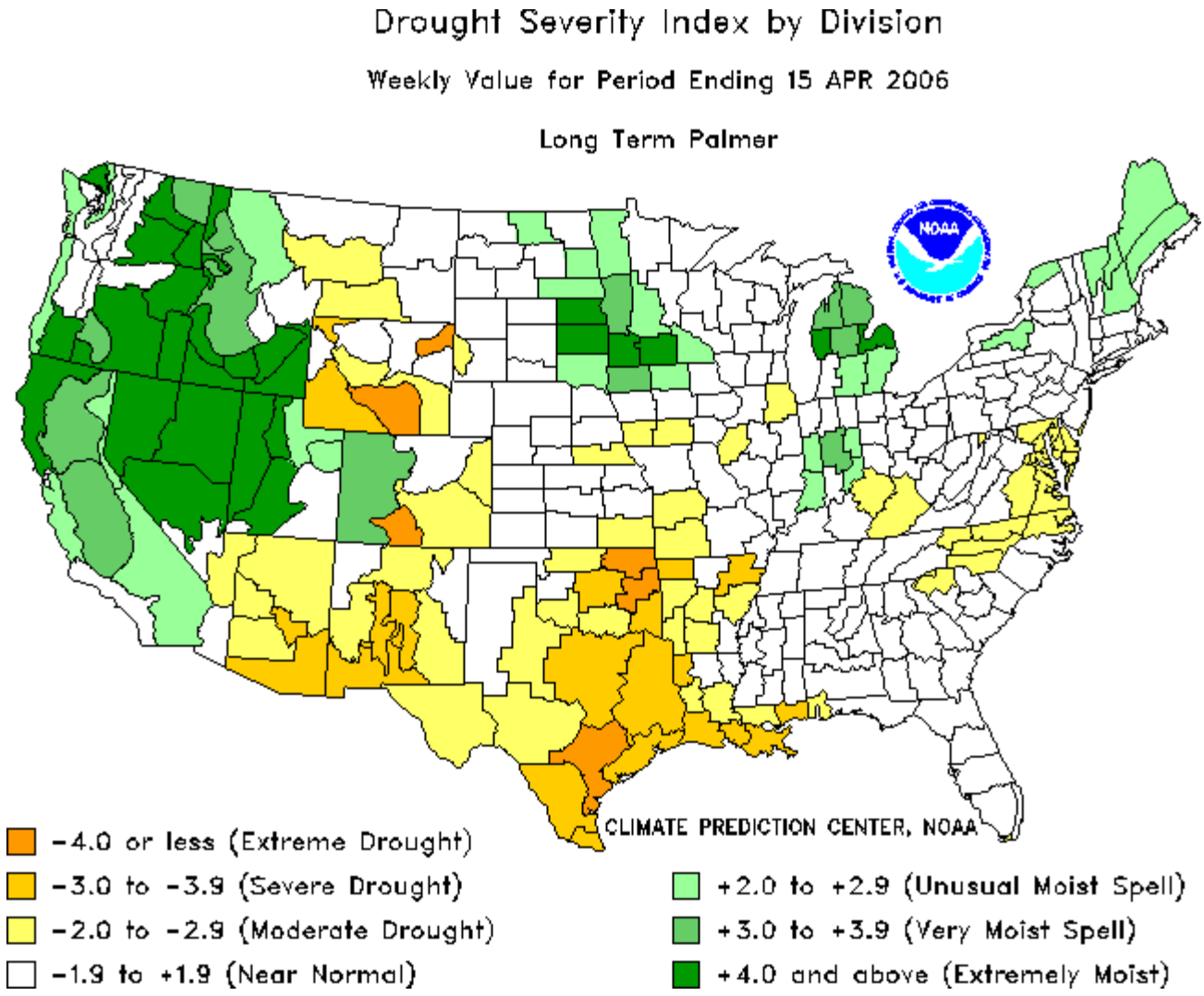


Table 5: Crop Moisture Index

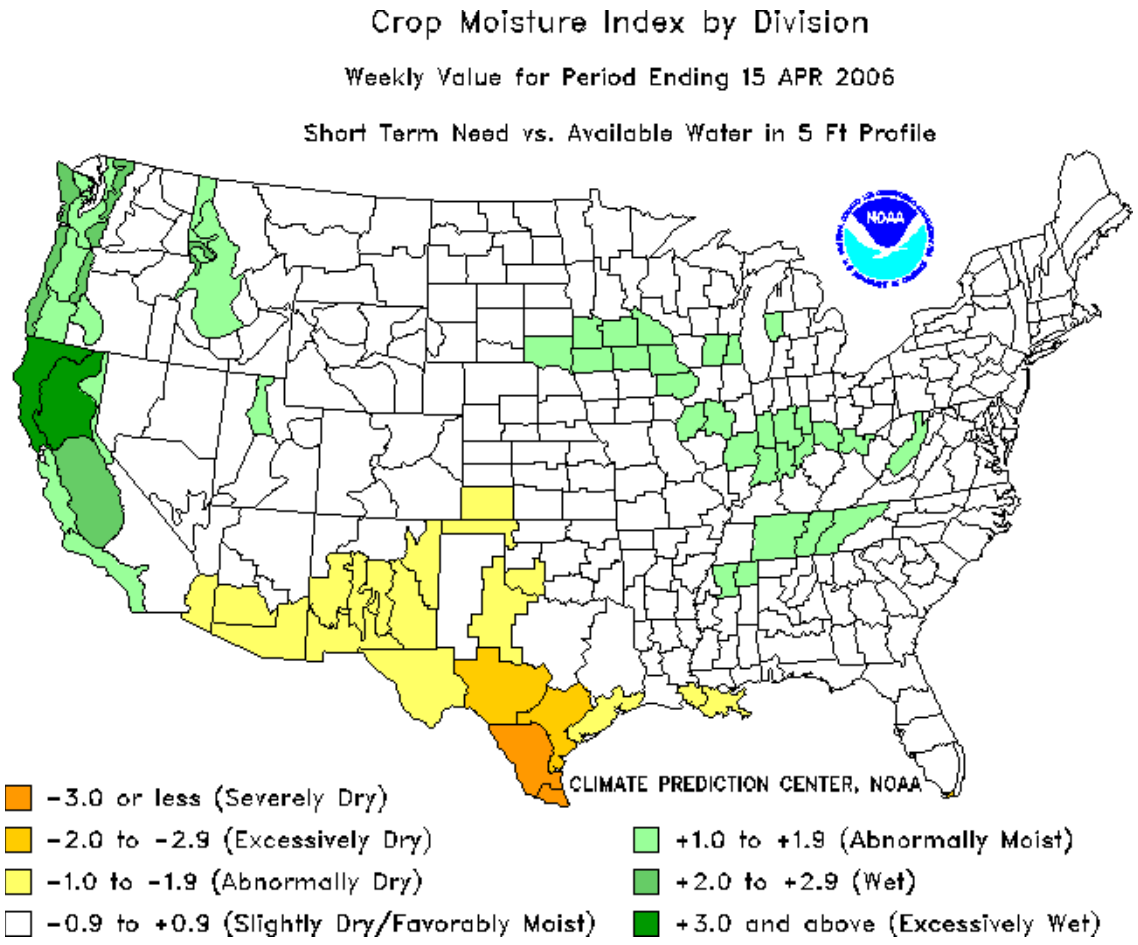
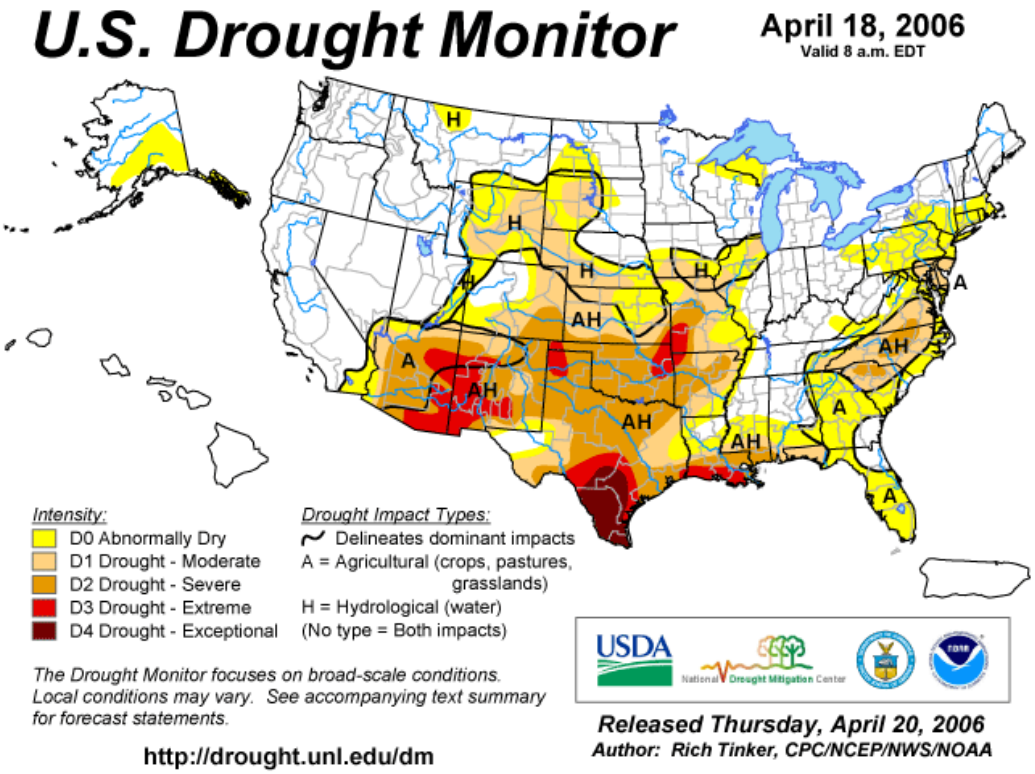
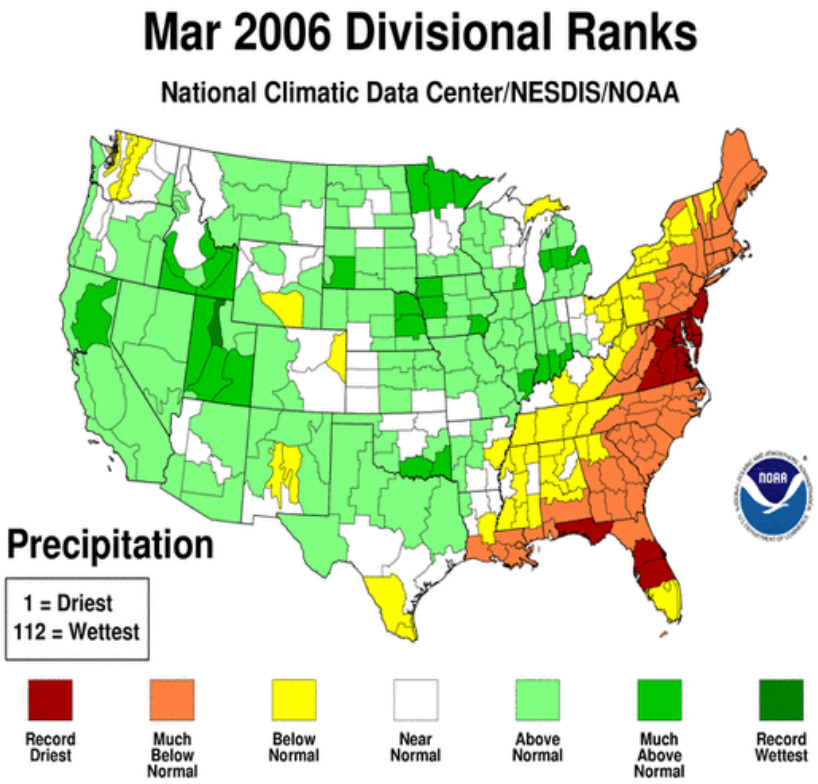


Table 6: US Drought Monitor



Tables 6 and 7 present national seasonal assessment and state rankings based on precipitation. The Drought Monitor (Table 6) focuses on broad scale conditions, and portrays Rhode Island experiencing an abnormally dry intensity through April 18, 2006. The NOAA NCDA Statewide Precipitation Ranking reveals Rhode Island in a "much below normal" ranking which is a significant change from last month's "near normal" ranking.

Table 7: NOAA NCDA Statewide Precipitation Ranks



DISCUSSION

Water conditions for Rhode Island have remained below normal through March 2006 with a continued decrease in precipitation through April until April 23, 2006 when 1.44" of rain was recorded at T.F. Green Airport. Water conditions will continue to be closely monitored over the next month. The Drought Steering Committee was convened on April 20, 2006 to review conditions and advise the Rhode Island Water Resources Board. The Committee and the Water Resources Board will continue to closely monitor conditions, and plan to meet May 11, 2006 to assess the current "normal" drought status.

RECOMMENDATIONS : Information only.

Additional Information on Water Conditions:
NOAA NWS Climate Report http://www.erh.noaa.gov/box/fcsts/BOSESFBOX.html
NOAA Drought Severity Index by Division
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif
Crop Moisture Index by Division
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/cmi.gif
U.S. Regional Drought Watch, Climate of February 2006
http://www.ncdc.noaa.gov/oa/climate/research/2006/feb/drought-regional-overview.html